REMARKS

Applicants respectfully request examination and consideration of the claims in view of the above amendments. Claims 11-19 and 24-29 were pending. Within the Office Action, Claims 11-19 and 24-29 have been rejected. Claims 25 and 29 were previously canceled. By the above amendments, Claims 11, 18, 24 and 28 have been amended, and new Claim 30 has been added. Accordingly, Claims 11-19, 24, 26-28 and 30 are currently pending in this application.

Amendments to the Specification

By the above amendments, the Specification has been amended to correct typographical errors. No new matter has been added.

Rejections under § 103

Within the Office Action, Claims 11-19, 24 and 26-28 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,915,325 to Lee et al. (Lee) in view of U.S. Patent No. 6,845,100 to Rinne et al. (Rinne). The Applicants respectfully disagree.

Lee teaches a method and program code for communicating with a mobile node through tunnels. Lee teaches that location update message for a mobile node can be made interceptible by routers which form tunnels for communication with the mobile node. [Lee, Abstract] Lee further teaches that to form a tunnel, the correspondent agent binds the mobile node address with the care of address received in the location update message. [Lee, col. 4, lines 11-17, Figure 3] Within the Office Action, this section of Lee is cited as teaching that a correspondent node is attached to the packet radio network. The Applicants respectfully disagree. Applicants reiterate, Lee clearly is referring to a mobile node, not a correspondent node. Lee does not teach that a correspondent node is attached to the packet radio network. In contrast, Lee does not show or describe the correspondent node outside the packet radio network at all.

As set out in Claim 11, the gateway support node provides an interface between an external packet data communications network and a packet radio network. It is further specified in Claim 11 that the packet radio network providing a plurality of packet data bearers for communicating internet packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the internet packets.

There is no disclosure in Lee of a packet radio network. Furthermore, there is no disclosure in Lee of the packet radio network providing a plurality of packet data bearers for communicating the internet packets with nodes attached to the packet radio network. This is because Lee merely discloses an IP tunnel that is a single IP packet data bearer. Lee also teaches that the IP packets are tunnelled by the correspondent agent to the mobile node's care of address based on the IP destination address of the mobile node's home address at the foreign agent 40 or the care of address at the correspondent agent. [Lee, col. 6, line 66 - col. 7, line 16]

Moreover, within the Office Action, it is stated that Lee teaches a packet radio network based on Figure 3. However, Lee never uses the word "radio." Applicants respectfully disagree that a packet radio network is taught by Lee.

Lee further teaches that the correspondent agent is arranged to detect only a binding update when a router alert is included. [Lee, col. 3, line 53 - col. 4, line 23] In contrast, the presently claimed invention, as defined in Claim 11, specifies that the IP packets have the router alert header option to identify to the router that the extension header is optional to read, the IP packets being communicated to the correspondent nodes from mobile nodes attached to the external network. The hop-by-hop extension header indicates that the extension header is to be read by the gateway support node, whereas for a router it is optional.

Lee also does not teach controlling the egress or ingress of internet packets to the packet radio network in accordance with the information contained in the hop-by-hop extension header field which is inspected by the gateway support node. Simply directing packets to the tunnel based on the destination address does not represent controlling egress or ingress of internet packets in accordance with the information contained in the hop-by-hop extension header field. More particularly, according to Claim 11, ingress of internet packets from the external packet data communications network to the packet data bearers of the packet radio network is effected by detecting in the hop-by-hop extension header a source address of the mobile correspondent node. In contrast, Lee teaches communicating packets via the tunnel to the mobile node based on the destination address. Furthermore, there is no further disclosure in Lee of identifying one of the packet data bearers for communicating the internet packets to the correspondent node attached to the packet radio network based on this source address.

Additionally, Lee is directed to IPv4, contrary to the invention which applies to IPv6. Specifically, IPv6 does not define foreign agents, while IPv4 does, and Lee utilizes foreign agents. Moreover, IPv6 was defined in December 1998; yet the Router Alert Option described in

Network Working Group RFC 2113 which is incorporated by reference into Lee was published in February 1997. Thus, RFC 2113 and Lee could not include IPv6.

Within the Office Action, in the Response to Arguments section, it is stated that "the hop-by-hop extension implicitly exists since a portion of the Binding Update includes a Router Alert option." [Office Action, page 2] Applicants respectfully disagree, as there is no hop-by-hop extension in Lee. Furthermore, extension headers do not exist in IPv4. Thus, the "extension header" feature does not exist in Lee, which also means a hop-by-hop extension does not exist in Lee.

Additionally, Lee does not teach how the correspondent host 50 and the correspondent agent 60 are attached to the network 55.

Further, Lee addresses a different problem than the claimed invention. Lee aims at reducing the "high volume" of registration traffic from a mobile node to the home agent each time the mobile node moves by making the border router intercept the registration message (binding update) and then acts as the proxy of the mobile node without further forwarding the registration to the home agent as long as the mobile node stays in the same network as the border router.

Within the Office Action, Rinne has been asserted as providing a router alert option for a GGSN to read the header. Although, Rinne does disclose the GPRS architecture in Figure 3 which includes a GGSN, and discloses in Figure 11 an IPv6 extension header including a hop-by-hop option header, there is no indication in Rinne of one of the fields of the extension header identifying that the hop-by-hop extension header field should be read by a gateway support node.

Furthermore, the combination of Lee and Rinne is improper. Lee is clearly directed to a standard before IPv6 was developed; yet Rinne implements IPv6. Thus, the two are incompatible as Lee cannot be adapted to utilize IPv6.

For at least the above reasons, the independent Claim 11 is allowable over the teachings of Lee, Rinne and their combination. The independent Claims 18, 24 and 28 have similar differentiating limitations and are therefore also allowable over the teachings of Lee, Rinne and their combination for the same reasons.

Claims 12-17, 26 and 27 are dependent on the independent Claim 11. Claim 19 is dependent on the independent Claim 18. As described above, the independent Claims 11 and 18 are allowable over the teachings of Lee, Rinne and their combination. Accordingly, Claims 12-17, 19, 26 and 27 are all also allowable as being dependent upon an allowable base claim.

New Claim

The new independent Claim 30 is directed to a gateway support node operable to provide an interface between an external packet data communications network and a packet radio network, the packet radio network providing a plurality of packet data bearers for communicating user data packets with nodes attached to the packet radio network, each of the packet data bearers being defined with respect to a source home address of nodes communicating the user data packets, the gateway support node being arranged to receive a user data packet comprising a header field, the header field including a field identifying a source address of the user data packet, a field identifying a destination address of the user data packet and a next header field identifying whether an IPv6 extension header follows the header and a type of the extension header, the next header field identifying that the extension header includes a hop-by-hop extension header, the hop-by-hop extension header including a router alert option header indicating that the hop-by-hop extension header is optional for a router to read, and a value field indicating that the remainder of the hop-by-hop header is provided for the gateway support node, the remainder of the hop-by-hop extension header including a field providing a home address of a mobile node, the gateway support node being operable upon receipt of the user data packet, to detect that the next header field of the user data packet includes the hop-by-hop extension header, and to detect the router alert option header in the hop-by-hop extension header, and the value field indicating that the remainder of the hop-by-hop extension header is provided for the gateway support node, and upon detecting the value field indicating that the remainder of the hop-by-hop extension header field is for the gateway support node, to recover information from a field provided in the remainder of the hop-by-hop extension header for use in controlling egress and/or ingress of the user data packets to the packet radio network in accordance with the information, wherein the gateway support node controls ingress of the user data packets from the external communications network to the packet data bearers of the packet radio network, by detecting from the information field provided in the remainder of the hop-by-hop extension header a source home address of a mobile correspondent node communicating the user data packets, using the home address to identify the packet data bearer for communicating the user data packets to a correspondent node attached to the packet radio network, and allowing ingress of the user data packets to the identified packet data bearer. In addition to the reasons described above, Lee, Rinne and their combination do not teach, user data packets, rather they teach signaling data packets. Further, Lee, Rinne and their combination do not teach an IPv6 extension

header field. For at least these reasons, the independent Claim 30 is allowable over the teachings of Lee, Rinne and their combination.

Applicants respectfully submit that the pending claims are in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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